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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,255	04/15/2004	Gabriel L. Suci	EH-10672 (04-183)	8122
34704	7590	12/09/2005	EXAMINER	
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			WIEHE, NATHANIEL EDWARD	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/825,255	Applicant(s) SUCIU ET AL.	
	Examiner Nathan Wiehe	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-11 is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-17 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of the apparatus in the reply filed on 27 October 2005 is acknowledged. The traversal is on the ground(s) that there would not be undue burden on the examiner. This is not found persuasive because the apparatus and method hold separate status within the art. Evidence of this is that their fields of search would not be coextensive. See MPEP 808.02(B).

The requirement is still deemed proper and is therefore made FINAL.

Response to Arguments

Applicant's arguments with respect to claims 1-7 and 12-17 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments, see page 10 lines 16-24, filed 27 October 2005, with respect to claim 8 have been fully considered and are persuasive. The rejection of claims 8-11 has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,4-7,12,13,15-17 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lombard (2,579,745) in view of Burge (6,267,553). Lombard discloses a turbine including a rotor, containing a plurality of disks (12) extending from

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an inner aperture to an outer periphery and a plurality of spacers (21), and a central shaft (10) passing through the apertures and carrying the plurality of disks (12) and spacers (21). The spacers (21) of Lombard are in an interference fit with the disks (12) (Lombard column 3, lines 41-51). The turbine of Lombard does not contain any off-center tie members. Further the rotor of Lombard is under a desired pre-compression force and the shaft is under a tension (Lombard column 4, lines- 21-23). Lombard does not disclose the use of spacers including an outwardly concave cross-section. Burge discloses the use of outwardly concave spacers (72, 74) in a turbine engine in order to reduce radial strain and bending stress (Burge column 3, lines 54-62). Burge's spacers axially deflect during operation and include at least one sealing tooth (116,114). Due to the deflection and shape of the spacers (72,74) an increasing longitudinal compression force would be provided to disks as the rotational speed of the turbine increased. It would have been obvious to one of ordinary skill in the art to modify the spacers of Lombard by incorporating an outwardly concave cross-section in the spacer's outer flanges (24) in order to reduce radial strain and bending stress, which in turn would increase the maximum surface speed of the rotor and including sealing teeth to improve the turbine efficiency.

In regard to claim 2, the modified spacers of Lombard disclose the invention substantially as claimed except for explicitly stating the longitudinal span of the spacer. Applicant has not discloses that having a longitudinal span of at least 2.0 cm provides an advantage or solves a stated problem. Therefore, it would have been prima facie obvious to further modify the invention of Lombard to obtain the invention as specified in

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claim 2 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Lombard in view of Burge.

In regard to claims 6, 7 and 13, Burge and Lombard are silent as to the exact rotational speed range of the turbine engine. However, Burge's spacer would inherently be capable of having an outwardly concave shape and exhibit a continuously increasing force throughout the turbine engines entire operating range including speeds in excess of 5000 rpm. Further the turbine of Lombard is inherently capable of being used as a high speed compressor, where the shaft would be classified as a high speed shaft and the disks would be high speed compressor disks (Lombard column 2, lines 9-12).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lombard in view of Burge as applied to claim 1 above, and further in view of Naudet (4,844,694). The modified turbine of Lombard discloses the invention substantially as claimed except for the use of a spacer unitarily formed with one of the adjacent disks. Naudet discloses a turbine including spacers unitarily formed with adjacent disks (See Figs 1,2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the turbine of Lombard by including spacers unitarily formed with an adjacent disk in order to facilitate the turbine's construction.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lombard in view of Burge as applied to claim 12 above, and further in view of an engineering expedient. The modified turbine of Lombard discloses the invention substantially as claimed except that the first force is 50-200kN. It is common practice in the art of turbine

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engines to determine forces based on the specific dimensions of the turbine engine. Further, the applicant states, on page 12, "An exemplary precompression force is 50-200kN. Advantageous force will depend upon the size of the rotor stack, with longer stacks requiring greater force." Also, Lombard discloses that the amount of precompression force would be greater than the loading experienced in use (Lombard column 4, lines 30-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the precompression force in Lombard based on the specific size of the rotor stack in the turbine engine as an engineering expedient.

Allowable Subject Matter

Claims 8-11 are allowed.

Conclusion

Applicant's amendment (additional subject matter added to the independent claims) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

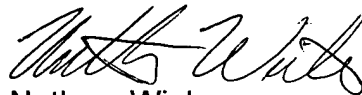
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Wiehe whose telephone number is (571)272-8648. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan Wiehe
Examiner
Art Unit 3745



EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
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12/5/05